

START

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STATEMENT OF WORK PROJECT B-714

218-E-16 FY 88 GROUT DISPOSAL VAULT

CLIENT: WESTINGHOUSE HANFORD COMPANY W.O. NO.: ER-1085 KEH NO.: 240860
PREPARED BY: E. C. Heubach II DATE: October 27, 1987

REFERENCES:

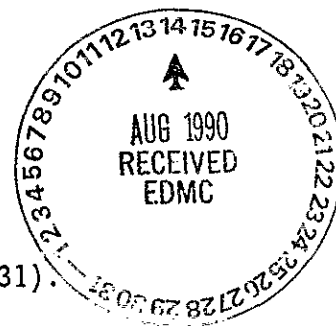
- A. Functional Design Criteria, SD-714-FDC-001, Rev. 0 (Approved)
- B. Rockwell Hanford Operations (Rockwell) Letter R87-2281, 6-9-87, G. D. Campbell to E. C. Heubach II, "B-566d, . . ., LOI."
- C. Westinghouse Hanford Company letter 8752423, dated 7-29-87, G. D. Campbell to E. C. Heubach II, "Project B-714, . . ., Supplemental LOI."

PROJECT SCOPE:

The scope of this effort includes the Definitive Design for the second grout vault (complete) and parts of the third vault. The following major elements are included:

A. Project Scope

- 1. Revise site plans to indicate vault layout for vaults 107 to 180.
- 2. Concrete structure for vault 103 and 104.
- 3. Backfill to vault lip.
- 4. Double liners.
- 5. Revised leachate collection system.
- 6. Structural backfill.
- 7. Shielding backfill.
- 8. Piping for vault 103.
- 9. Electrical for vault 103.
- 10. Soil/Bentonite mix interim cover.
- 11. Soil testing to document vault subgrade layers.
- 12. Construction Quality Assurance Plan (EPA/530-SW-86-031).



B. Enhancements to Vault Design

- 1. Blast furnace slag.
- 2. Complete cathodic protection system.
- 3. Asphalt hydraulic/diffusion break, including reevaluate vault footing spacing.
- 4. Interim cover design, to conform to RCRA requirements.
- 5. Sloped and waterproofed cover panels.
- 6. Air inleakage.
- 7. Manway access.
- 8. Higher liner temperature requirement, from 70 C for first vault to 90 C for the second vault.

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C. Project Scope Not Included

1. Jumper pit. - *FUTURE WORK*
2. Five year plan *(will be supplied by WHC)*.
3. Ground water and vadose zone monitoring wells/equipment. *KRA REG?*
4. CENRTC equipment design.
5. No CWO design, such as *drainage ditch*, is included.
6. Calculations, reports, drawings and consultations that will contribute to a Part B application. This effort will eventually be included, but is dependent upon receipt of a LOI from the client. Manhours shown do not reflect Part B support.
7. As-building of the first vault drawings will be complete and correct, prior to use of the drawings as part of B-714.
8. No existing manually drawn mylars will be converted to CAD. However, all new drawings will be on CAD.
9. A new excavation plan is not included. This will be done through separate funding.
10. A piping hydraulic diagram for the entire site is not included.
11. "New Facility Update" requirements, as required in the FDC, will not be funded under Definitive Design.
12. Third party design review is not included. WHC will contract separately for this item. *CONTRACT w/WHC REVIEW*
13. Results of the vault liner study currently in progress are not included. For instance, new vault geometry is not included in this estimate. Also, changes to the leachate collection piping for automatic recycle are not included.

D. Design will be divided into the following packages, each with a separate KFS number.

Work Package	Design Package
WP #1	Asphalt pad, concrete shell, leachate tank
WP #2	Asphalt diffusion break coating
WP #3	Liners
WP #4	Structural cover, electrical, instrumentation, and Piping
WP #5	Vault isolation
WP #6	Interim cover

DEFINITIVE DESIGN

KEH will perform Definitive Design in accordance with DOE Order 5700.2a. For this effort, KEH will provide services and produce deliverables as summarized below:

CIVIL/STRUCTURAL

A. For work package No. 1 (vault shell and leachate tank):

- . 1 drawing list (will include all six packages).
- . 1 Civil site plan.
- . 1 Structural vault plan.
- . 1 Structural vault sections.
- . 1 Structural vault details.
- . Input to B-714-C1 construction specification.
- . Meeting attendance.
- . Incorporation of client comments.

B. For work package No. 2 (asphalt coating and backfill):

- . 1 Structural plan for asphalt coating, including details*.
- . 1 Civil backfill plan and sections.
- . Input to B-714-C2 construction specification.
- . Meeting attendance.
- . Incorporation of client comments.

* This assumes complete specification of the required asphalt coating layers from PNL, through WHC. KEH design will be limited to assuring a constructable, cost-effective design is illustrated, based upon correct input from WHC.

C. For work package No. 3 (liner)

- . 1 Civil liner plan and details.
- . Calculations for liner thickness, based on Disc 15 input.
- . No specification input (this will be provided by Disc 15 Environmental/Process).
- . Meeting attendance.
- . Incorporation of client comments.

D. For work package No. 4 (vault cover panels, piping, electrical, and instrumentation)

- . 1 roof plan.
- . 1 roof detail.
- . 1 roof topping (for drainage and air tightness).
- . 1 vault pit plan.
- . 1 vault pit details.
- . 1 penetration plan.
- . 1 shielding backfill.
- . Input to B-714-C4 construction specification.
- . Meeting attendance.
- . Incorporation of client comments.

E. For work package No. 5 (vault isolation)

- . Closure drawing - 3 sheets.
- . Input to B-714-C5 construction specification*.
- . Meeting attendance.
- . Incorporation of client comments.

* Based on complete description of void space filling criteria from WHC.

F. For work package No. 6 (interim cover)

- . 1 Plan and detail for interim cover.
- . Input to B-714-C6 construction specification*.
- . Meeting attendance.
- . Incorporation of client comments.

* Based on complete description of interim cover layer criteria from WHC.

PIPING

A. For work package No. 1 (vault shell and leachate tank):

- . 1 leachate tank plan and sections.
- . Analysis of tank capacity and material.
- . Input to B-714-C1 construction specification.
- . Meeting attendance.
- . Incorporation of client comments.

B. For work package No. 5 (vault cover, piping, electrical, and instrumentation)

- . 1 plan for grout and excess water piping.
- . 1 miscellaneous detail.
- . 1 piping support plan.
- . 1 support detail.
- . 1 vault pit jumper arrangement.
- . 1 vault pit piping details.
- . 1 excess water pump pit plan and detail.
- . 1 leachate pump pit plan and detail.
- . 1 expansion void details.
- . 1 drain seal assembly and details.
- . 1 hose handle detail.
- . 1 pit cover painting diagram.
- . 1 spool drawing - grout pipe.
- . 1 spool drawing - excess water pipe.
- . 1 plan - grout and excess water piping.
- . 1 leachate pump pit extension plan and details.

- . Stress analysis of piping for thermal and seismic loads.
- . Input to B-714-C4 construction specification.
- . Meeting attendance.
- . Incorporation of client comments.

HVAC

This design effort will be performed in work package No. 1.

- . 1 study to provide design input for airtight structure, including client review and comment incorporation.
- . Input to structural design.
- . Meeting attendance.

INSTRUMENTATION

All design will be included in work package No. 4.

- . P&ID.
- . 2 CASS wiring details.
- . Input to piping design.
- . Input to electrical design.
- . Input to B-714-C4 construction specification.
- . Meeting attendance.
- . Incorporation of client comments.

ELECTRICAL

All design will be included in work package No. 4. The listing below is divided in two groups. The first is for cathodic protection. The second is for the balance of the electrical design.

- A. Cathodic protection - to provide a completely functional system, KEH will produce design documentation and enlist the aid of an offsite consultant (National Association of Cathodic Engineering [NACE]).
- . 1 design study, including review of criteria and existing design, and a brief report.
 - . 3 site plan drawings.
 - . TGE site
 - . First vault site
 - . Second vault site
 - . 2 drawings for details.
 - . Cathodic protection design analysis.
 - . Input to B-714-C4 construction specification.
 - . Input to Cathodic protection ATP.
 - . Meeting attendance.
 - . Incorporate client comments.

- . Coordinate with NACE consultant and incorporate consultant comments.

B. Other Electrical Design

- . 1 site plan.
- . 1 vault plan.
- . 3 drawings - Electrical details.
- . 1 elementary diagram.
- . 1 connection diagram.
- . 1 wire run list.
- . 3 drawings - connector schedule.
- . Input to B-714-C4 construction specification.
- . Meeting attendance.
- . Incorporation of client comments.

SPECIFICATIONS

- . Produce six construction specifications.
- . Produce one ATP.
- . Meeting attendance.
- . Incorporate client comments.

SPECIALTY ENGINEERING

- . Produce shielding analysis for encased piping and shielding backfill.
- . Meeting attendance.

DESIGN ADMINISTRATION

- . Serve as Lead Lead Engineer throughout Definitive Design.

ENVIRONMENTAL/PROCESS ENGINEERING

All efforts for this discipline will be funded through a separate work order. This will be mainly to prepare certified Engineering Reports as part of a RCRA Part B application. WHC will perform all other tasks for the Part B application.

ESTIMATING

- . Prepare six final Project Cost Estimates, one for each work package.
- . Prepare six Fair Cost estimates, one for each work package.

SAFETY REVIEW

- . Review design documents for safety compliance.

QA REVIEW

- . Review design documents for compliance with criteria, standards, and procedures.

QA AUDIT

- . Perform audit to determine compliance with criteria, standards, and procedures.

TITLE III INSPECTION

- . Review design documents.
- . Prepare Title III Inspection Estimate.

PROJECT MANAGEMENT

- . Ensure that project technical, budget, and schedule objectives are met.

ADMINISTRATIVE/REPORTS

- . Provide Word Processing/typing support.

SCHEDULE

- . The schedule* for Definitive Design is as follows:

Start Definitive Design	11-1-87
Complete Definitive Design	7-1-88
Duration of Definitive Design	8 months

* Assumes no adverse schedule impact either from as building of B-566-B or Part B Engineering Report preparation.

PART B - JUNE 88 TO DEC
MAR TO WKC